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We claim:

1. A process for the preparation of a polyether-urethane
5 comprising at least one allyl group which comprises, in
incorporated form,
 - a) at least one polyether which comprises a group reactive
toward isocyanate groups, and an allyl group,
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 - b) optionally at least one compound which comprises at least
two groups reactive toward isocyanate groups, and
 - c) at least one polyisocyanate,
15and in which
 - i) in a first stage the compounds a), optionally some of the
compounds b) and at least some of the polyisocyanates c)
20 are reacted without the addition of a solvent, at a
temperature of at least 60°C and at a ratio of isocyanate
group equivalents to equivalents of groups reactive
toward isocyanate groups in a range from 1.5:1 to 2.2:1,
to give an isocyanate group-comprising prepolymer, and
25
 - ii) in a second stage the prepolymer obtained in step i) is
reacted with the compounds b) and c) not already used in
step i) to give the polyether-urethane.
- 30 2. A process as claimed in claim 1, in which, in stage i), a
prepolymer with a glass transition temperature T_g of at most
100°C, preferably of at most 60°C, is obtained.
3. A process as claimed in claim 2, in which the reaction in
35 step i) takes place at a temperature which is higher than the
glass transition temperature of the prepolymer.
4. A process as claimed in any of claims 1 to 3, in which the
compounds b) used in step ii) have hydroxyl groups as groups
40 reactive toward isocyanate groups, and the reaction takes
place without the addition of a solvent.
5. A process as claimed in any of claims 1 to 3, in which the
compounds b) used in step ii) have primary or secondary amino
45 groups as groups reactive toward isocyanate groups, and the

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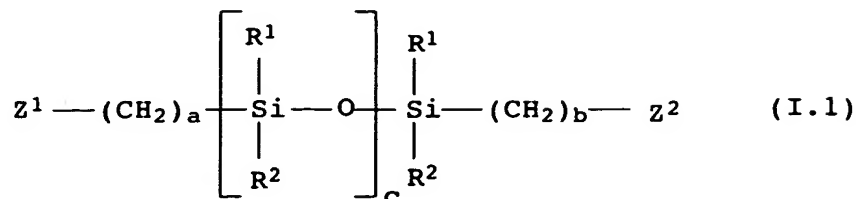
reaction takes place in the presence of a protic-polar solvent.

6. The use of a water-soluble or water-dispersible polymer which comprises at least one free-radically polymerizable compound which has at least one α,β -ethylenically unsaturated double bond and at least a polyether-urethane in copolymerized form, where the polyether-urethane comprises at least one allyl group, and, in incorporated form,
- a) at least one polyether which comprises a group reactive toward isocyanate groups, and an allyl group,
- b) optionally at least one compound which comprises at least two groups reactive toward isocyanate groups, and
- c) at least one polyisocyanate,
- as setting agent and/or as conditioner in hair treatment compositions.
7. The use as claimed in claim 6, where the composition is in the form of a hair gel, hair mousse, shampoo, setting foam, hair tonic, hair spray or hair foam.
8. The use of a polymer as claimed in claim 6, as or in (a) coating composition(s) for solid medicament forms, and as or in (a) coating composition(s) for the textile, paper, printing and leather industry, and also for agrochemistry.
9. A polyether-urethane comprising at least one allyl group, which comprises, in incorporated form,
- a) at least one polyether which comprises a group reactive toward isocyanate groups, and an allyl group,
- b) at least one compound which comprises at least two groups reactive toward isocyanate groups, chosen from compounds b3) with a number-average molecular weight of more than 280 which contain at least two active hydrogen atoms and at least one siloxane group per molecule, and
- c) at least one polyisocyanate.
10. A polyether-urethane as claimed in claim 9, which comprises, in incorporated form, at least one compound b3) chosen from:

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- polysiloxanes of the formula I.1



10 in which

a and b, independently of one another, are 1 to 8,

c is 2 to 100,

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R¹ and R², independently of one another, are C₁-C₈-alkyl, benzyl or phenyl,

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Z¹ and Z², independently of one another, are OH, NHR³ or a radical of the formula II

where

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in the formula II the order of the alkylene oxide units is arbitrary and

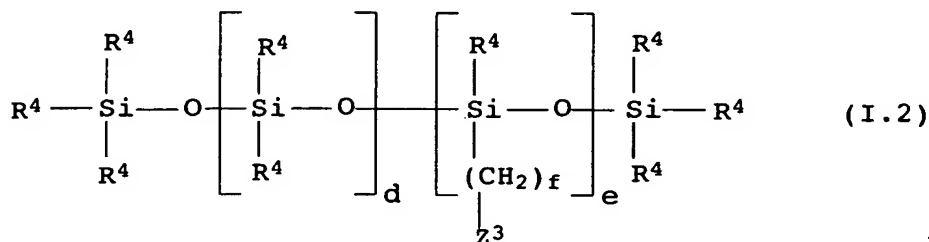
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v and w, independently of one another, are an integer from 0 to 200, where the sum of v and w is > 0,

R³ is hydrogen, C₁-C₈-alkyl or C₅-C₈-cycloalkyl;

- polysiloxanes of the formula I.2

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in which

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the order of the siloxane units is arbitrary,

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the radicals R^4 are each, independently of one another,
 C_1 - C_8 -alkyl, preferably methyl, benzyl or phenyl,

d is an integer from 5 to 1000,

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e is an integer from 2 to 100,

f is an integer from 2 to 8,

10

z^3 is OH, NHR^3 , where R^3 is as defined above, or a
radical of the formula III



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where

in the formula III the order of the alkylene oxide units is
arbitrary,

20

x and y, independently of one another, are an integer from 0
to 200, where the sum of x and y is > 0 ,

and mixtures thereof.

25 11. A water-soluble or water-dispersible polymer which comprises,
in copolymerized form, at least one polyether-urethane as
defined in any of claims 9 or 10, and at least one
free-radically polymerizable compound which has at least one
 α,β -ethylenically unsaturated double bond.

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12. A polymer as claimed in claim 11, which comprises, in
copolymerized form, at least one free-radically polymerizable
hydrophilic nonionic compound M1).

35 13. A polymer as claimed in claim 12, where the compound M1) is
chosen from primary amides of α,β -ethylenically unsaturated
monocarboxylic acids, N-vinyl lactams, N-vinyl amides of
saturated monocarboxylic acids, esters of α,β -ethylenically
unsaturated mono- and dicarboxylic acids with C_2 - C_4 -alkane-
40 diols, amides of α,β -ethylenically unsaturated mono- and
dicarboxylic acids with C_2 - C_4 -aminoalcohols which have a
primary or secondary amino group, vinyl ethers, nonionic,
hydrophilic vinyl- and allyl-substituted heterocyclic
compounds and mixtures thereof.

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14. A polymer as claimed in claim 13, which comprises, in copolymerized form, a compound M1) chosen from acrylamide, methacrylamide, N-vinylpyrrolidone, N-vinylcaprolactam, N-vinylformamide, N-vinylacetamide and mixtures thereof.

5

15. A polymer as claimed in any of claims 12 to 14, which additionally comprises, in copolymerized form, at least one free-radically polymerizable compound M2) with an α,β -ethylenically unsaturated double bond and at least one ionogenic and/or ionic group per molecule.

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16. A polymer as claimed in any of claims 12 to 15, which additionally comprises, in copolymerized form, at least one free-radically polymerizable crosslinking compound with at least two α,β -ethylenically unsaturated double bonds per molecule.

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17. A polymer as claimed in any of claims 12 to 16, which is obtainable by free-radical copolymerization in the presence of a component d) chosen from

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d1) polyether-containing compounds,

d2) polymers which have at least 50% by weight of repeat units derived from vinyl alcohol,

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d3) starch and starch derivatives,

and mixtures thereof.

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18. A polymer as claimed in any of claims 12 to 17, obtainable by free-radical polymerization of

- 1 to 25% by weight, based on the total weight of the components used for the polymerization, of at least one polyallyl-polyether-urethane,

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- 50 to 99% by weight of at least one free-radically polymerizable nonionic compound M1),

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- 0 to 25% by weight of at least one monomer M2) with at least one ionogenic and/or ionic group per molecule,

- 0 to 10% by weight of at least one crosslinker,

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optionally in the presence of up to 25% by weight of at least one component d), as defined in claim 10.

19. A process for the preparation of a polymer as defined in any
5 of claims 12 to 18 by free-radical polymerization in an aqueous solvent at a pH of from 5.5 to 8.0.
20. A process as claimed in claim 19, comprising a first
10 polymerization step and a subsequent second polymerization step, where the reaction mixture between the first and second polymerization step is subjected to stripping with steam or to a steam distillation.
21. A cosmetic or pharmaceutical composition comprising
15 A) at least one water-soluble or water-dispersible polymer as defined in any of claims 11 to 18, and
B) at least one cosmetically acceptable carrier.
22. A composition as claimed in claim 21, where component B) is
20 chosen from
i) water,
25 ii) water-miscible organic solvents, preferably C₁-C₄-alkanols,
iii) oils, fats, waxes,
30 iv) esters of C₆-C₃₀-monocarboxylic acids with mono-, di- or trihydric alcohols which are different from iii),
v) saturated acyclic and cyclic hydrocarbons,
35 vi) fatty acids,
vii) fatty alcohols
40 and mixtures thereof.
23. A composition as claimed in claim 21 or 22, further
comprising at least one constituent different from copolymer
A which is chosen from cosmetically active ingredients,
45 emulsifiers, surfactants, preservatives, perfume oils, thickeners, hair polymers, hair and skin conditioners, graft polymers, water-soluble or dispersible silicone-containing

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polymers, light protection agents, bleaches, gel formers,
care agents, colorants, tints, tanning agents, dyes,
pigments, bodying agents, humectants, refatting agents,
collagen, protein hydrolysates, lipids, antioxidants,
antifoams, antistats, emollients and softeners.

24. A composition as claimed in any of claims 21 to 23 in the
form of a solution, a gel, wax, foam, spray, an ointment,
cream, emulsion, suspension, lotion, milk or paste.

25. The use of a polymer as defined in any of claims 11 to 18 in
skin cleansing compositions, compositions for the care and
protection of the skin, nail care compositions, preparations
for decorative cosmetics and hair treatment compositions.

26. The use as claimed in claim 25 in hair treatment compositions
as thickener, setting agent and/or as conditioner.

27. The use as claimed in claim 26, where the composition is in
the form of a hair gel, hair mousse, shampoo, setting foam,
hair tonic, hair spray or hair foam.

28. The use of a polymer as defined in any of claims 11 to 18 as
auxiliary in pharmacy preferably as or in (a) coating
composition(s) for solid medicament forms, and as or in (a)
coating composition(s) for the textile, paper, printing and
leather industry, and also for agrochemistry.